Priority – Medium **Security Level –** In Confidence

Ministry for Primary Industries
Manatū Ahu Matua

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Short-term and long term measures to manage elite and versatile soils

Purpose:

To provide an overview of the state of New Zealand's highly productive soil resource, and outline short and long term measures to better manage the loss of highly productive soil as a result of urban development.

Minister	Action Required:	Minister's Deadline
Minister of Agriculture	**Note** the contents of this briefing **Note** that officials will be inviting key stakeholders to workshops to further develop the problem definition for a National Policy Statement under the Resource Management Act for highly productive soils and other options for Government intervention **Agree** to forward this briefing to the Minister for the Environment **Agree** to meet with the Minister for the Environment to discuss short-term measures to manage highly productive soils	When Practicable
CC	**Minister for the Environment** **Minister of Forestry** **Associate Minister of Agriculture**	

Contact for telephone discussion (if required**)**

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Key Messages

1. The loss of highly productive soil has been outlined in the recent *Our Land 2018* report. Approximately 14% of New Zealand's total land area is considered to have 'elite' (LUC class 1) or versatile (LUC class 2-3) soils. Some councils also consider small groups within other LUC classes to be elite. For the purpose of this briefing, elite and versatile soils will be referred to as highly productive soils.

2. The availability of quality soil is essential to our current methods of primary production, particularly for vegetable production for which soil quality is a limiting factor. Research undertaken by Plant and Food Research in 2017 shows that there is about 3.8 million hectares of highly productive soil with climate conditions that make it suitable for horticultural or arable production. Only 474,000 ha are currently used for these types of production.

3. MPI consider that there in an opportunity to balance some level of continued urban development on highly productive land where necessary to support housing needs, while allowing for continued production of fresh fruit and vegetables as horticultural production moves into new areas.

4. Urban expansion may be challenging for regional economies that rely on established production and processing infrastructure. Government intervention for highly productive soils may be appropriate to balance the needs of these existing communities and the need for urban development.

5. This intervention will include a National Policy Statement under the Resource Management Act (RMA), as announced by Minister Parker in April 2018.

6. We will also develop tools and support the sector with any necessary land-use change through the Land-Use Transition work programme. As well as urban expansion, other pressures, like climate change and technology will impact on the horticulture sector.

7. Work is currently underway that will assist with the management of highly productive soils while national direction is developed, including:
   - Ministry for Primary Industries (MPI) funding programmes to influence land owner behaviour;
   - the MPI Council Engagement Strategy, which includes submitting on council plans for strategically important issues, including highly productive soils;
   - reversing 2017 changes to the RMA which weakened public engagement on the subdivision consent processes;
   - ensuring RMA National Direction is taken into account through the proposed Urban Development Authority's (UDA) powers;
   - influencing the Urban Growth Agenda, particularly spatial planning work under the urban planning pillar; and
   - influencing the Auckland Growth Strategy.

8. An NPS is likely to take several years to develop. This timeframe could potentially be truncated by limiting the scope to certain geographic areas or to elite soils. We consider that the measured outlined above, in combination with changes in

patterns of productive land-use will be sufficient to manage the pressure on highly productive soils in the meantime.

9. You may wish to meet the Minister for the Environment to discuss how RMA levers can be better utilised to manage highly productive soils in the short term. It would be useful to follow up by meeting the Minster for Housing and urban development to discuss longer term alignment of an NPS for highly productivity soils with urban development work programmes.

10. Officials will hold stakeholder workshops to develop a problem statement for national direction on versatile soils in more detail, and test options for government intervention.

Recommendations

11. The Ministry for Primary Industries recommends that you:

a) **Note** the contents of this briefing

Noted

b) **Note** that officials will be inviting key stakeholders to workshops to further develop the problem definition for a National Policy Statement for highly productive soils and other options for Government intervention

Noted

c) **Agree** to forward this briefing to the Minister for the Environment

Agreed / Not Agreed

d) **Agree** to meet with the Minister for the Environment and officials to discuss short-term measures to manage highly productive soils

Agreed / Not Agreed

e) **Agree** to invite the Minister for Housing and Urban Development to discuss alignment of MPI's versatile soils work with the Urban Growth Agenda work programme

Agreed / Not Agreed

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/ / 2018

Background

1. The *Our land 2018* report, released by the Ministry for the Environment and Stats NZ, helped to highlight a number of issues affecting the quantity and quality of New Zealand's soils. This included the effects of erosion and intensive agriculture, and urban expansion reducing the availability of some of our most versatile and productive soils. The New Zealand soil sciences community, sector groups, and some councils have been strong advocates for central government intervention in the management of highly productive soils.

2. In December 2017, MPI briefed you on the current state of, and pressures on, versatile soils in New Zealand (B17-0690 refers). This included an overview of the role that soils play in providing ecosystem services to New Zealand. Since that time, the Minister for the Environment has publicly announced that officials will begin work on a National Policy Statement under the Resource Management Act to manage the loss of versatile soil to non-productive activities, including urban development.

Why are highly productive soils valuable?

3. Elite and versatile soils currently play a fundamental role in land-based primary industries, particularly for vegetable production, for which soil quality is a limiting factor to the level of production that can be sustained. The Land Use Capability Classification (LUC) is the main system used in New Zealand to describe the productive capability of land. Approximately 14% of New Zealand's total land area is considered to have 'elite' (LUC class 1) or versatile (LUC class 2-3) soils. In addition to the LUC 1 soils, some councils also consider small groups within other LUC classes to be elite. For the purpose of this briefing, elite and versatile soils will be referred to as highly productive soils.

Most highly productive soils are used for pastoral agriculture

4. Soil type and local climatic factors influence the type of primary production that can occur. By way of example, the highly productive soils south of Auckland combined with the current climate make it an ideal location to grow a variety of crops year round. Other regions of New Zealand, such as Taranaki, have large areas of highly productive soils but the current climate conditions (frosts) limit the type of vegetable production that the land could sustain.

5. However, research undertaken by Plant and Food Research in 2017 shows that there is approximately 3.8 million hectares of highly productive soil with climate conditions that make it suitable for horticultural and arable production. Approximately 474,000 ha are currently used for horticulture. This presents an opportunity to allow for some level of continued urban development where necessary to meet the housing needs of a growing population while allowing for continued production of fresh fruit and vegetables.

6. The area of highly productive soils varies by region across New Zealand. The way in which each region utilises their soil resource also varies. The use of versatile soils across four regions where high pressures on the highly productive soil resource exist are broken down in the tables attached as Appendix One. This shows that the majority of this land is currently used for animal-based production.

Implementation of the Government's policies for freshwater and climate change, along with other market signals, may lead land owners to reconsider whether animal-based production is the best use of this land.

The horticultural sector is likely to be most disrupted by urban expansion

7. The horticultural sector is likely to experience a greater degree of disruption as urban areas continue to expand when compared to other productive land uses. This is because vegetable growing generally requires highly productive soils (whereas other productive land uses can occur on a wider range of land). In addition, the horticultural sector have made large capital investment in processing facilities close to pockets of highly productive soils and these rely on a critical mass of vegetable producers within a certain distance to be cost-effective.

8. Across the value chain, horticulture employs more than 39,000 full-time equivalent workers and contributes over $1.8 billion to the New Zealand economy. The loss of productive land may have a detrimental effect on regional economies and the communities they support where loss of land results in a reduction in employment opportunities. The effect on the economy has not yet been quantified, however we expect this to be covered to some extent in economic analysis of Pukekohe vegetable production which HortNZ will be releasing in August. You will host the launch event for this report at Parliament and we will brief you on its contents once we receive an embargoed copy.

9. While we have not seen strong evidence that a food security issue is emerging in New Zealand, the ongoing supply of fresh produce will need to be considered as the New Zealand population grows. New Zealand faces a particular challenge when compared to other countries as we export ~90% of our primary produce. As export markets grow, there is likely to be greater competition for highly productive soil to produce high value export crops and this may displace market gardens that produce fresh vegetables for the domestic market.

10. There may be a need to encourage or incentivise this type of production, especially where higher value export crops could be grown. Further work will be required to identify specific mechanics to incentivise production of certain domestic produce, but a mix of regulatory (i.e. taxation or trade settings) and non-regulatory (i.e. extension) is likely to be required. This will be important to providing an inclusive economy where fresh and healthy food is affordable for all New Zealanders.

Urban expansion has secondary impacts on horticulture

11. In addition to the immediate loss of versatile soils to urban growth, there are a number of secondary issues for primary producers operating on urban fringes. For example, orchards and farms can be affected by urban expansion reducing aquifer recharge, nearby urban neighbours complaining about noise, spray drift etc., and strain on infrastructure (e.g. roads).

Council plans manage soils variably across New Zealand

12. The way in which councils are managing the use of highly productive soils varies region by region. Some councils recognise the significance of highly productive

soils and include provisions to manage or protect the soil resource in their plans. While these rules are generally implemented at a territorial authority level (district and city council), they must be consistent with the direction set by the regional council through its Regional Policy Statement (RPS). The consideration of highly productive soils through an RPS also varies by region, with Auckland and Gisborne giving stronger consideration than Waikato and Taranaki.

13. The Auckland Unitary Plan has strong protections for elite soils (e.g. the Pukekohe market gardens), and provides for the protection of versatile soils where practical. Auckland Council initially proposed that both elite and versatile soils be offered the same high level of protection through the Proposed Auckland Unitary Plan. However, the independent hearings panel would only support protection for elite soils as they considered there was a need to balance the needs of growing rural communities and production, and that versatile soils were fairly extensive across the region. While this means the plan didn't achieve the Council's ambition for soil protection, the Auckland Unitary Plan offers a stronger degree of protection than Council's first generation RMA plan.

Options for Government Intervention

14. There are likely to be a number of options for Government intervention to manage the highly productive soil resource. A number of high level considerations for designing new interventions is outlined in Appendix Two.

We can influence the management of highly productive soils through instruments currently under development

15. There are a number of planning instruments that are being developed to manage urban development appropriately and any intervention for highly productive soils will need to be aligned with these. We are looking at opportunities to include consideration of versatile soils through existing instruments and those currently under development. These include:
    - *2018 Amendments to the RMA:* The 2017 RMA amendments added preclusions on public notification and appeals for all subdivision consents. Those changes are proposed to be repealed through the 2018 RMA Amendments, meaning that councils will be able to publicly notify subdivision consent applications that have more than minor environmental impacts (e.g. effects on versatile soils). This will provide an opportunity for the public (including soil experts) to submit and provide information to inform good decisions by councils, and make appeals to the Environment Court.
    - *UDA:* The proposed UDA legislation will provide powers to override existing RMA planning documents, but must be consistent with RMA national direction. There will also be opportunity for councils and central government agencies to input into the initial assessment of a development plan.
    - *The Auckland Development Strategy and Hamilton to Auckland Corridor: This* represents a step-change in how we promote greater integrated inter-regional strategic and transport planning between central and local government. It provides a platform to support regional economic growth, particularly through consolidated spatial planning and the expansion of high quality transport connections. While not central to this work, we will discuss with MBIE the impact of development on highly productive soils.

- *Spatial planning work under the urban planning pillar:* MfE and MBIE are developing a framework for strategic integrated planning through methods such as spatial planning, that are fit for purpose, to apply throughout New Zealand. This will be informed by lessons from the Auckland Development Strategy work.
- *Writing to Councils:* you may want to meet with the Minister for the Environment to discuss the value of him writing to Council Chief Executives, Chairs, and Mayors, regarding the management of highly productive soils through their planning processes.

16. In the short term, MPI will continue to make submissions on council planning documents where they contain provisions that either erode, or are insufficient to protect, the highly productive soil resource.

Funding and extension may play a role in influencing land-owner decisions

17. Wider non-regulatory approaches can also be taken in the short term. MPI is responsible for the administration of a number of funding programmes, which can act as incentives to drive certain behaviours and actions. Through these programmes, MPI works closely with communities, Māori and landowners to realise the economic potential of their land, including capability development within primary sectors to better realise economic potential.

    MPI's role in these funding programmes is an important part of our broader stakeholder engagement. Many projects funded by MPI and led by our community stakeholders can help the policy development process, and there is potential to fund projects that trial innovative ways to protect and manage highly productive soil resources. It is important to note that because individual projects are typically community-driven and led, there has to be stakeholder demand for the work carried out.

Development of national direction

18. In April the Minister for the Environment announced that officials would begin work on developing a National Policy Statement to better manage the highly productive soil resource. We are looking at the scope for this instruments, to identify the appropriate level of intervention to manage the highly productive soil resource. Alongside this, we will look at a range where complementary measures will be appropriate.

19. These instruments typically take several years to develop, and in the case of National Policy Statements, there is a lag time between the instrument being published in the *New Zealand Gazette* and councils making changes to their plans to give effect to the policy statement. National direction instruments are also resource intensive for councils. The development time for RMA national direction may be reduced by narrowing the scope of the instrument. This may be by limiting its application to specific geographic areas, for example Pukekohe, or by limiting the scope to elite (LUC 1) soils.

20. Ahead of making recommendations on these options, we will test our understanding of the problem, scope and considerations with councils, sector stakeholders and urban developers. Following this, we will undertake a more comprehensive assessment of potential instruments to understand how they would address the problems identified.

21. This process will also look at whether there are further policy levers that could be developed over a longer-term to address the management of highly productive soil.

Next Steps

Sector Engagement

22. We propose that officials hold one or two workshops with local government officials, primary sector thought leaders, soil scientists, and urban developers. This will give us a better idea of the current and future pace of change, and how quickly intervention by Government is needed.

Meeting with Ministers

23. We recommend that you meet with the Minister for the Environment to discuss the content of this briefing, particularly how other urban development levers can be used while national direction is developed.

24. Following this, you may wish to invite the Minister for Housing and Urban Development to discuss how the Urban Development work programme can better consider the value of highly productive soils.

Appendix One: Hectares and percent areas of land in LUC classes 1, 2 and 3

AUCKLAND

Land use	Class 1	Class 2	Class 3
Pastoral grassland	1507 (34.4%)	39948 (73.2%)	51291 (80.0%)
Arable farmland	2359 (53.9%)	4694 (8.6%)	1637 (2.6%)
Other horticultural land	120 (2.7%)	1745 (3.2%)	738 (1.1%)
Urban[1]	311 (7.1%)	6249 (11.5%)	3096 (4.8%)
Totals	4376 (100%)	54533 (100%)	63854 (100%)

WAIKATO

Land use	Class 1	Class 2	Class 3
Pastoral grassland	40595 (87.9%)	233149 (93.1%)	238568 (86.1%)
Arable farmland	2927 (6.3%)	6514 (2.6%)	3064 (1.1%)
Other horticultural land	280 (0.6%)	1196 (0.5%)	541 (0.2%)
Urban	1645 (3.6%)	4613 (1.8%)	4283 (1.5%)
Totals	46168 (100%)	250432 (100%)	276959 (100%)

TARANAKI

Land use	Class 1	Class 2	Class 3
Pastoral grassland	34025 (93.7%)	52333 (94.6%)	87298 (94.3%)
Arable farmland	623 (1.7%)	387 (0.7%)	219 (0.2%)
Other horticultural land	146 (0.4%)	31 (0.05%)	40 (0.04%)
Urban	640 (1.8%)	654 (1.2%)	1050 (1.1%)
Totals	36303 (100%)	55318 (100%)	92552 (100%)

CANTERBURY

Land use	Class 1	Class 2	Class 3
Pastoral grassland	12114 (52.5%)	155613 (57.8%)	417112 (77.0%)
Arable farmland	9564 (41.5%)	103374 (38.4%)	102337 (18.9%)
Other horticultural land	182 (0.8%)	1410 (0.5%)	1907 (0.4%)
Urban	896 (3.9%)	4609 (1.7%)	4982 (0.9%)
Totals	23054 (100%)	269133 (100%)	541881 (100%)

[1] The New Zealand Land Resource Inventory, from which the LUC is derived, excluded mapping of urban areas and rivers and lake beds when originally mapped through the 1970s and 1980s. The urban figures included here are areas of land where urban development has occurred on previously productive land or natural areas since mapping occurred in the 1970s and 1980s.

Appendix Two: Considerations for the Development of New Government Intervention on Soil

Defining the scope for highly productive soil management

25. Throughout this briefing we consider highly productive soils to be LUC classes 1-3. A further assessment on whether all of these classes warrant management through a central government instrument, and to what extent, will be needed. Councils typically consider LUC 1-2 to be highly productive soils (~5% of land). Some experts also consider LUC 3 to be versatile but there is more disagreement here. Including LUC 3 land in the definition of versatile soils captures a larger amount of land (~14% of land).

26. In addition to this, councils also consider specific soil groups which are outside of LUC 1-2 as elite or versatile. This is due to the properties of these soils being particularly well suited to horticultural or arable production. Allowing flexibility to manage these soils groups will need to be taken into account.

Any regulatory approach will need to be based on reliable data

27. Technology and the scientific community's understanding of soils has changed since the LUC system was developed and mapped through the 1970s and '80s. The system has not been amended since then, which means that the information contained in the LUC needs to be reviewed and updated to ensure it is fit for purpose. Councils and soil scientists have identified issues with the scale of mapping, its reliability within regulatory tools, and errors in some of the classifications which means elite soils may not be classified as such.

28. The LUC system largely focuses on productive capacity of land rather than the suitability of land for a certain productive activity. The 'Our Land and Water' National Science Challenge currently has research underway into land use suitability. This project aims to build a better understanding of the effects of land use on the receiving environment and may result in the development of land use suitability classification tools.

Climate change and future technologies may affect highly productive land

29. As climate changes, the ability to grow certain crops in highly productive soils will also change as rain and frost levels limit, or promote, growth. For some regions, this may present opportunities to grow the horticulture and arable sector. In others, the sector will need to consider alternative crops or uses for their land. The rate of this change will vary by region. Recent research undertaken by Manaaki Whenua - Landcare Research suggests that our ability to grow kiwifruit in the Eastern Bay of Plenty will be reduced over the next 50 years and that further research is needed to understand the effect of climate on production across New Zealand's primary sectors.

30. The intensity and duration of adverse weather events is also increasing. We have already seen the impact that this has on the primary sectors, particularly for vegetable

producers. For instance, the increased cost of cauliflower and kumara in New Zealand supermarkets over the 2017/18 season can largely be attributed to weather events.

31. Primary sectors and the government will need to take more rapid action to adapt to the effects of climate change, including considering how we use technology in vegetable production. This may mean a higher reliance on closed system horticulture such as hot-house production or hydroponics to improve resilience to storm events, and may also reduce freshwater nutrient discharges when compared to soil-based production.

32. The MPI-led Land Use Transition work programme will look at what needs to be done by these sector groups and councils to prepare for these changes. When looking at soil management, both current and future use should be considered when developing any central government levers.

The cumulative impact of government policy interventions may influence land-use

33. Government policy intervention, including freshwater quality and quantity regulations and the inclusion of Agriculture in the Emissions Trading Scheme are likely to affect potential patterns of land use over time. When these are considered alongside market signals, they may drive decisions to change land use, including a move away from animal-based production on highly productive soils. While some modelling has been done on the land use implications of the Carbon Zero programme and Freshwater regulations independently, the cumulative impact of these on farming viability has not been closely examined.

34. This could potentially result in more Class 1-3 land becoming available in locations suitable for horticulture. Further work will be undertaken through the Land Use Transition work programme to understand the scale of this cumulative impact and whether it keeps up with loss of productive land as a result of urban expansion.

Risk of gold rush

35. Farmers close to urban centres have subdivision as their ‘retirement plan’ and moves to change planning rules may lead to a ‘gold rush’ with farmers selling before they miss out. There are options in the Resource Management Act for councils to manage this when making plan changes. Regardless, this will need to be considered and managed when developing any policy intervention.